

## Biochemistry (J000494)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0**

**Study time 180 h**

**Contact hrs**

45.0h

**Course offerings and teaching methods in academic year 2022-2023**

A (semester 1)

Dutch

Gent

self-reliant study activities

2.5h

lecture

42.5h

**Lecturers in academic year 2022-2023**

Remaut, Katrien

FW01

lecturer-in-charge

**Offered in the following programmes in 2022-2023**

[Bachelor of Science in Pharmaceutical Sciences](#)

**crdts**

6

**offering**

A

**Teaching languages**

Dutch

**Keywords**

Biochemistry, biophysics, bioenergetics, biological macromolecules, carbohydrates, lipids and biomembranes, proteins, enzymes, nucleic acids, metabolism

**Position of the course**

The biochemistry course builds on the knowledge and insights that were acquired in general and organic chemistry and physics. The students are given insight into the structure, function and interactions of biomolecules (nucleic acids, proteins, carbohydrates and lipids); the most important biochemical processes are described. The students are also encouraged to participate in lifelong learning through self-study.

**Contents**

Introduction to biochemistry  
Interactions in aqueous environment  
Nucleic acids  
Amino acids, peptides, proteins  
Structure-function relationship of proteins  
Carbohydrates  
Lipids and biomembranes  
Eicosanoids, steroids and vitamins  
Bioenergetics  
Enzymatic catalysis and kinetics  
Metabolism of carbohydrates, lipids and amino acids.

**Initial competences**

This course unit builds on certain learning outcomes of course units 'Inorganic Chemistry', 'Organic Chemistry' and 'Physics for Pharmacy' from the study programme 'Bachelor in Pharmaceutical Sciences'.

**Final competences**

- 1 To have insight into biochemistry in a pharmaceutical context.
- 2 The understand the effect of intra- and intermolecular molecular interactions and the influence of water on biochemical processes
- 3 Have insight into the bioenergetics and the central role of energy on life and biochemical processes
- 4 Demonstrate the role of phosphate compounds and enzymes in endogenous reactions

- 5 Explain the causes of uneven distribution of ions and molecules in different body compartments
- 6 Know the biochemically, structurally and pharmaceutically important sugars, polysaccharides, lipids, biological membranes, amino acids, peptides, proteins, their function and their complexes with other building blocks
- 7 Describe the function and biosynthesis of eicosanoids, steroids and vitamins
- 8 Have insight into the structure function relationship of proteins and nucleic acids and the importance of primary, secondary, tertiary and quaternary structures.
- 9 Understanding the functioning and kinetics of enzymes in a pharmaceutical context
- 10 Know the most important pathways of metabolism
- 11 Understand an English-language manual on biochemistry in the context of lifelong learning

#### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Seminar, Lecture, Self-reliant study activities

#### **Extra information on the teaching methods**

Theory: lectures supported by peer instruction and audiovisual material. Exercises: under the supervision of assistants and / or the teacher. Detailed exercises are made available through Ufora. The students have ample opportunity to test themselves and interact with each other (via the Ufora forum) and with the supervisors.

#### **Learning materials and price**

Mathews, Van Holde et al. Biochemistry 4th Edition,  
Pearson 2013 (+ - € 80)  
Pharmaceutically oriented supplements (copies and on Ufora)

#### **References**

#### **Course content-related study coaching**

Classroom lectures: possibility to ask questions before and after class, or by e-mail

#### **Assessment moments**

end-of-term assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Written examination with multiple choice questions, Written examination with open questions

#### **Examination methods in case of periodic assessment during the second examination period**

Oral examination, Written examination with multiple choice questions, Written examination with open questions

#### **Examination methods in case of permanent assessment**

#### **Possibilities of retake in case of permanent assessment**

not applicable

#### **Extra information on the examination methods**

Written exam with use of multiple choice questions and open questions. This exam includes insightful theoretical questions, numerical and non-numerical exercises.

#### **Calculation of the examination mark**

Periodical evaluation: Written exam with use of multiple choice questions and open questions. This exam includes insightful theoretical questions, numerical and non-numerical exercises.

Weighted average of the individual scores for the periodic evaluation.

